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## POST-FOAMING SHAVING GELS

This invention is concerned with post-forming

dispensed from a container as a gel and which

dispensed from a container as a gel and which

shaving gels, that is shaving compositions which are

disipensed from a container as a gel and which

skin to form a shaving foam.

spontaneously foam when spread or manipulated on the

such past-foaming shaving gels are to be

formed from ready-formed shaving foams which

dispensed from different containers as a team. 1995

Patients 2, 995, 521 and 3, 541, 581 and in British

specifications 1,279,145, 1,444,334 and 2,166,150. They

may be contacted and dispensed from a collection site nearby.

the *containing* compartment of a *host* cell.

Latent term being used herein generically to cover an

is physically separated from the propellant).

ALL SUCH SAVING GATS CORRECTIN A CORRECTIVE

soonest container is issued. the post-foaming agent should

be one or more of the volatile liquids used as aerosol

more people's wants and the gel composition contains sufficient

of such a propellant to obtain the desired post-foaming

and is associated, in the container, with additional

propel laminate which serves to expand the fiber from the

CONCLUDING upon REBELLION in the case of the

additionaL pressure in the container by further introducing a compressed non-liquefied gas, such as nitrogen, in order to ensure that the whole of the container contents can be exploded.

When a two-compartment container is used, the gel (containing the required post-foaming agent) is physically separated from the propellant. The gel or gel (containing the required post-foaming agent) is separated by a movable piston; the gel is, of course, so positioned within the container that it can be exploded from the container outlet. A suitable expandable envelope or they may be expandable, respectively, envelope or the propellant may be contained in a collapsible or within an impermeable expandable envelope) available from Enviro-Spray N.V. Belgium.

In two-compartment containers, the propellant serves to expel the gel from the container and does not have any post-foaming function.

Whilst a number of post-foaming shaving gels are currently available products.

We have found that these desirable characteristics can be obtained by including one or more of a selected group of polyols in a soap-based micro-emulsion gel.

According to the present invention, there is provided a post-foaming shaving gel, which comprises, by weight:

1. Soap-foaming fatty acid	8.0 - 30.0%
2. Soap-foaming base	2.0 - 6.0%
3. Liquid liquid paraffin	2.0 - 8.0%
4. Polyol	1.0 -

30

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2. Soap-foaming base	2.0 - 6.0%
3. Liquid liquid paraffin	2.0 - 8.0%
4. Polyol	1.0 -



5	Sufficiently soap-forming fatty acids are saturated or unsaturated fatty acids containing from 12 to 18 carbon atoms and include, for example, palmitic acid, stearic acid and myristic acid, or more of these. The preferred amount of polyol (4) will depend upon the particular soap-forming fatty acid used; the production of a clear gel requires a higher proportion of polyol (4) when myristic acid is used. Mixtures of palmitic acid (90-95%) and other naturally occurring fatty acids, such as stearic acid, are preferred.
10	When myristic acid is used, the preferred amount of polyol (4) will depend upon the particular soap-forming fatty acid used; the production of a clear gel requires a higher proportion of polyol (4) when myristic acid is used. Mixtures of palmitic acid (90-95%) and other naturally occurring fatty acids, such as stearic acid, are preferred.
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20	The composition preferably contains from 9.0 to 11.0% of this constituent. The composition preferably contains from 9.0 to 11.0% of this constituent.
25	Any soap-forming base can, in principle, be used as constituent (2). Suitable organic bases are, for example, triethanolamine, diethanolamine, monooctethanolamine, morpholine, iso-propanolamine, which the first, triethanolamine, is the most preferred.
30	Inorganic bases such as ammonia, sodium hydroxide and potassium hydroxide can also be used. Mixtures of two or more of these bases can also be used, if desired.
35	As already indicated, the amount of base used should be at least sufficient to neutralize the fatty acid (1); it is preferred not to use an excess of the base.

100 centistokes (cs). A preferred light liquid paraffin is available under the trade mark "Carnation" 70. The composition preferably contains from 2.0 to 3.0% of this constituent. It is the use of one or more of the specified polyols which imparts excellent clarity and brightness and a desirable consistency to the gel.

5 Constituent (4) Polysiloxane copolymers have the CFTA name, dimethicone copolymers. They are polymeric compounds of the formula:

$$\begin{array}{c}
 (\text{CH}_3)_3\text{Si}-\text{O}-\text{Si}(\text{CH}_3)_3 \\
 | \quad | \quad | \quad | \\
 \text{CH}_3 \quad \text{O} \quad \text{Si}(\text{CH}_3)_3 \\
 | \quad | \quad | \quad | \\
 (\text{CH}_2)_3-\text{O}-(\text{C}_2\text{H}_4\text{O})_x-(\text{C}_3\text{H}_6\text{O})_y-\text{H}
 \end{array}$$

They are available from Th. Goldschmidt AG, of Essen, Germany, under the trade mark "Abil". Various grades of the polyols, we currently prefer to use 2-40/60; this is available as "Abil" B8863. Ethylene oxide and propylene oxide they contain. We are available which differ in the ratio (x/y) of ethylene oxide and propylene oxide the x/y ratio is currently prefer the material in which the x/y ratio is 40/60; this is available as "Abil" B8863.

20 The composition preferably contains from 1.75 to 4.0% of this constituent. Constituent (5) The post-forming agent may be any of the propellants for aerosols. It is preferred to use blends of liquidified gases or volatile liquids which are used as and n-propane; blends of iso-pentane and iso-butane or more of n-pentane, iso-pentane, n-butane, iso-butane of liquid hydrocarbons and, in particular, blends of two propellants for aerosols. It is preferred to use blends of liquidified gases or volatile liquids which are used as particularly preferable.

30 The composition preferably contains from 2.0 to 4.0% of this constituent. Constituent (5) The post-forming agent may be any of the propellants for aerosols. It is preferred to use blends of liquidified gases or volatile liquids which are used as and n-propane; blends of iso-pentane and iso-butane or more of n-pentane, iso-pentane, n-butane, iso-butane of liquid hydrocarbons and, in particular, blends of two propellants for aerosols. It is preferred to use blends of liquidified gases or volatile liquids which are used as

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to 4.0% of this constituent. The shaving gel according to the invention may contain a number of optional ingredients including the glycols in post-foaming gels to control the consistency of the gel and of the foam and to give skin performance benefits. Suitable glycols are, for example, sorbitol, glycerol, propylene glycol and 1,3-butane diol, of which the first is preferred. A suitable proportion of this constituent is 1.0 to 4.0%, of one or more non-ionic surfactants in the composition. Such surfactants improve foam quality and consistency of the gel; they also facilitate the rinsing of the razor to remove foam meeting this requirement include for example, polyoxyethylene (POE) 20-oleyl ether (CTFA name, Oletin ether (steareth 100), 40 and 60 mole ethoxylate palm 20), POE 21-stearyl ether (steareth 21), POE 100-stearyl ether (steareth 100), 40 and 60 mole sorbitan monolaurate (avilable under the trade mark "Tween" 20), and POE 20-cetyl ether (ceteth 20 available under the trade mark "Brigi" 58). It is preferred to include up to 1.0%, more preferably 0.1 to 0.5%, of a cellulose polymer in the composition. Suitable cellulose polymers include, for example, hydroxypropyl cellulose, hydroxyethyl cellulose, hydroyethyl cellulose, and cellulose acetate. It is preferred to include up to 1.0%, more cellulose polymer.

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The cellulose polymer improves the  
consistency and thermal stability of the gel and  
enhances the lubricity of the foam. The preferred  
amount of such polymer depends on its molecular weight,  
a smaller amount (within the above range) of a high  
molecular weight polymer giving the same effect as a  
larger amount of a medium or low molecular weight  
polymer.

10  
Any composition preferably includes an anti-  
oxidant. The composition preferably includes  
conventionally used in totality compositions may be  
used, butylated hydroxy tolune (BHT) and butylated  
hydroxyanisole (BHA) being particularly preferred.

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When such an additive is used, it is  
preferably present in an amount up to 0.1%.

20  
Shaving aid and skin feel enhancers  
preferably present in an amount up to 0.1%.

25  
The composition may include a shaving aid,  
that is an additive which enhances the lubricity of the  
composition and thus facilitates shaving, and/or one or  
more additives which enhance shaving. A preferred  
shaving aid is, for example, polyoxyethylene.

30  
Polyoxyethylene is preferably present in an  
amount of up to 0.1%, more preferably about 0.01%, and  
such oils and esters are preferably present in an amount  
of up to 4%, more preferably about 1%.

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Any of the bactericides or bacteriostats which  
are commonly used in totality formulations may be used  
in the shaving gel according to the invention provided  
that they are compatible with micro-emulsions and do not

Preservatives

detract from the clarity of the gel. Suitable preservatives are, for example, phenoxyethanol and Quaternium 15 (CMA) which is available under the trade mark "Dowicil" 200.

Perfumes and dyestuffs are of the perfume and/or dyestuffs which are conventionally included in totally formulations for aesthetic reasons may be included in the gel according to the invention provided they are compatible with it. When a perfume is used, it will be evident to the user during use and may be residual on the skin after shaving.

As regards dyestuffs, a typical composition according to the invention is dispensed from its container, it emerges as a clear gel which converts to a foam when manipulated or spread over the skin. Completion of foaming typically takes from 30 to 60 seconds. As a foam, the composition according to the invention is an excellent aid to shaving.

The method of forming the composition according to the invention is as follows. One according to the invention is not critical. One preferred procedure is as follows. One of the constituents (1), (3), (4) and the non-ionic surfactant, if present, are mixed and heated to 80. - 85°C. to give a clear oil phase, constituent (2) is added and the mixture is been pre-heated to 85-90°C., is added to the previously formed mixture (the total amount of water previously been added to 85-90°C. is added to the previously formed mixture (the total amount of constituent (6), water, which has been added to obtain a clear pale yellow liquid. A fifth context is the total amount of water required for the batch less that required to form the 2% solution of the cellulose polymer, if present, referred to below). A sixth context is the total amount of water required for the batch less that required to form the 2% solution of the cellulose polymer, if present, referred to below).

35	Glycerol	1.94	-	-	-	3.0		
	2,4-diol	-	-	-	-			
	2-Methylpentane	-	-	-	-			
	Abil B8863	-	1.45	3.00	-			
30	2-Ethyl-1,3-hexane-diol	1.94	1.45	-	-			
	Liquid paraffin	2.90	2.90	2.90	2.90			
	Triethanolamine	5.69	5.69	5.69	5.69			
	Palmitic acid	9.69	9.69	9.69	9.69			
	Example	1	2	3	4			

were formed.

Sharing gels of the following compositions

Examples 1-4

Illustration:

proportions are by weight, are given by way of  
understood, the following examples, in which all

In order that the invention may be more fully  
described.

constituent (5), the post-foaming agent, it will be  
into the containers from which, after addition of  
temperature. The composition is then ready for filling  
batch is clear. Cooling is continued to ambient

if used, is added and slow mixing is continued until the  
cooling and slow mixing continued. At 40°C., perfume,

mixture, Dyes, if used, are added at this point and  
of this solution completing the water content of the

the cellulose polymer, if present, is added, the water  
added. At 60°C., a pre-formed 2% aqueous solution of

the latter is cooled and the glycol, if present, is  
sufficiently slow as to avoid aeration of the mixture.

stirring is resumed at a speed which is

emulsion is homogeneous and is then discontinued.

oil-in-water. Stirring is continued until the  
pre-heated, is added slowly; the emulsion slowly inverts

until it is uniform. The remainder of the water, also

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Example	Example (cont'd)	1	2	3	4
Dyes (green)	q.s.	q.s.	q.s.	q.s.	-----
ISO-pentane	2.40	2.40	2.40	2.40	ISO-pentane
ISO-butane	0.80	0.80	0.80	0.80	ISO-butane
Water	-----	-----	-----	-----	Water
					to 100%

In each case, all the constituents, apart from the post-foaming agents (5), were mixed to form a clear green micro-emulsion following the preferred procedure described above. On completion of cooling to 25-30°C., the liquid composition was filled into the upper part of a two-compartment aerosol container and the valve was crimped. The ISO-pentane/ISO-butane mixture was added through the valve and the container was shaken to disperse the liquid hydrocarbons.

The propellant was introduced into the lower compartment through a hole in the base of the container which was then sealed with a plug.

After standing for 72 hours to allow for stabilisation of the gel, the container was ready for use.

Upon activation of the container valve, the composition was dispersed as a clear and bright green gel which gave a lubricious shaving foam when spread over the skin.

glycols.

which additioanally comprises from 1.0 to 4.0% of one or more glycols.

9. A shaving gel according to any of claims 1 to 8, which comprises from 2.0 to 4.0% of constituent (5).

8. A shaving gel according to any of claims 1 to 7, which comprises from 2.0 to 4.0% of constituent (5).

7. A shaving gel according to any of claims 1 to 6, which comprises from 1.75 to 4.0% of constituent (4).

6. A shaving gel according to any of claims 1 to 5, which comprises from 2.0 to 3.0% of constituent (3).

5. A shaving gel according to any of claims 1 to 4, in which the constituent (2) is trethanolamine.

4. A shaving gel according to any of claims 1 to 3, comprising from 9.0 to 11.0% of constituent (1).

3. A shaving gel according to claim 1 or 2, which constituent (1) is palmitic acid.

2. A shaving gel according to claim 1, in which volatile liquid (5).

into a stable semi-solid gel by the incorporation of the stable liquid oil-in-water micro-emulsion which is converted (6) within the ranges specified being such that they form a copolymer, and the proportions of constituents (1) - (4) and methylpentane-2,4-diol, or a polyisobutene polymer being one or more of 2-ethyl-1,3-hexanediol, 2-

amount required to neutralise the fatty acid (1), the polyol the amount of soap-forming base (2) being at least the amount required to neutralise the fatty acid (1), the polyol being one or more of 2-ethyl-1,3-hexanediol, 2-

6. Water to 100%

5. Volatile liquid post-forming agent 1.0 - 8.0%

4. Polyol 1.0 - 8.0%

3. Liquid liquid paraffin 2.0 - 6.0%

2. Soap-forming base 8.0 - 30.0%

1. Soap-forming fatty acid weight:

1. A post-foaming shaving gel, which comprises, by weight:

## CLAIMS

10. A shaving gel according to claim 9, in which the glycol is sorbitol, glycerol, propylene glycol or 1,3-butane diol.

11. A shaving gel according to any of claims 1 to 10, which addititionally comprises up to 8.0% of anionic surfactants which have an HLB of at least 15.

12. A shaving gel according to claim 11, which comprises from 1.0 to 4.0% of said surfactant(s).

13. A shaving gel according to any of claims 1 to 12, which addititionally comprises up to 1.0% of a cellulosic polymer.

14. A shaving gel according to claim 13, in which the polymer.

15. A shaving gel according to any of claims 1 to 14, which cellulose or hydroxypropyl methyl cellulose.

16. A method of making a post-foaming shaving gel and/or dyestuffs.

17. A shaving gel comprising brittle constituents (1) - (4) and which comprises bridging together constituents (1) - (4) and filling it into a container from which it can be dispensed, filling it into a container from which it can be dispensed, such that they form a stable oil-in-water micro-emulsion, introducing the micro-emulsion into the container, and simultaneously or subsequently introducing the volatile emulsion, containing the micro-emulsion into the container, and semi-solid gel within the container.

18. A post-foaming shaving gel substantially as herein claimed in any of claims 1 to 15.

19. A container containing a post-foaming shaving gel described in any of examples 1-4.

as herein described in any of examples 1-4.

## INTERNATIONAL SEARCH REPORT

